



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

First Named  
Inventor : James K. Klang

Appln. No.: 10/748,792

Filed : December 30, 2003

For : APPARATUS AND METHOD FOR  
PREDICTING THE REMAINING  
DISCHARGE TIME OF A BATTERY

Docket No.: C382.12-0143

Group Art Unit:

Examiner:

**INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

I HEREBY CERTIFY THAT THIS PAPER IS BEING  
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29<sup>th</sup> DAY OF MARCH, 20 04.

*A. Leggo*  
PATENT ATTORNEY

Sir:

The patents or publications listed on the enclosed PTO Form-1449 are submitted pursuant to 37 C.F.R. § 1.97. Copies of the patents or publications cited are enclosed, except as waived by the Official Gazette notice of August 5, 2003 regarding copies of US Patents and Publications.

**TIME OF FILING**

The information disclosure statement is being filed:

1. X with the application or within three months of the filing date of the application or date of entry into the national stage of an international application or before the mailing date of a first Office action on the merits, whichever event occurs last. In accordance with 37 C.F.R. § 1.97(b), no statement or fee is required.

**METHOD OF PAYMENT**

X No fee is required.

       Attached is a check in the amount of \$       .


The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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|   |                                   |                           |
|---|-----------------------------------|---------------------------|
| FORM PTO-1449   | Atty. Docket No.:<br>C382.12-0143 | Serial No.:<br>10/748,792 |
|  <p>LIST OF PATENTS AND PUBLICATIONS FOR<br/>APPLICANT'S INFORMATION<br/>DISCLOSURE STATEMENT</p> | Applicant:                        |                           |
|   | Jim K. Klang                      |                           |
|   | Filing Date                       | Group Art:                |
|   | December 30, 2003                 |                           |

## U.S. PATENT DOCUMENTS

| Examiner Initial | Document No. | Date    | Name            | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|---------|-----------------|-------|-----------|----------------------------|
| AA               | 2,514,745    | 7/11/50 | Dalzell         | 171   | 95        |                            |
| AB               | 3,593,099    | 7/13/71 | Scholl          | 320   | 13        |                            |
| AC               | 3,607,673    | 9/21/71 | Seyl            | 204   | 1         |                            |
| AD               | 3,676,770    | 7/11/72 | Sharaf et al.   | 324   | 29.5      |                            |
| AE               | 3,729,989    | 5/1/73  | Little          | 73    | 133       |                            |
| AF               | 3,753,094    | 8/14/73 | Furuishi et al. | 324   | 29.5      |                            |
| AG               | 3,808,522    | 4/30/74 | Sharaf          | 324   | 29.5      |                            |
| AH               | 3,811,089    | 5/14/74 | Strezelewicz    | 324   | 170       |                            |
| AI               | 3,873,911    | 3/25/75 | Champlin        | 324   | 29.5      |                            |
| AJ               | 3,886,443    | 5/27/75 | Miyakawa et al. | 324   | 29.5      |                            |
| AK               | 3,889,248    | 6/10/75 | Ritter          | 340   | 249       |                            |
| AL               | 3,906,329    | 9/16/75 | Bader           | 320   | 44        |                            |

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|----|--------------|---------|---------|-------|-----------|--------------------|
| AM | 59-17892 ✓   | 1/30/84 | Japan   |       |           | Abstract Only      |
| AN | 59-17893 ✓   | 1/30/84 | Japan   |       |           | Abstract Only      |
| AO | 59-17894 ✓   | 1/30/84 | Japan   |       |           | Abstract Only      |

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|      |  |
|------|--|
| AP ✓ | "Electrochemical Impedance Spectroscopy in Battery Development and Testing", <u>Batteries International</u> , April 1997, pgs. 59 and 62-63. |
| AQ ✓ | "Battery Impedance", by E. Willihnganz et al., <u>Electrical Engineering</u> , September 1959, pgs. 922-925.                                 |
| AR ✓ | "Determining The End of Battery Life", by S. DeBardelaben, <u>IEEE</u> , 1986, pgs. 365-368.   |
| AS ✓ | "A Look at the Impedance of a Cell", by S. DeBardelaben, <u>IEEE</u> , 1988, pgs. 394-397.   |

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| Examiner Initial | Document No. | Date     | Name                | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|---------------------|-------|-----------|----------------------------|
| AT               | 3,909,708    | 9/30/75  | Champlin            | 324   | 29.5      |                            |
| AU               | 3,936,744    | 2/3/76   | Perlmutter          | 324   | 158       |                            |
| AV               | 3,946,299    | 3/23/76  | Christianson et al. | 320   | 43        |                            |
| AW               | 3,947,757    | 3/30/76  | Grube et al.        | 324   | 28        |                            |
| AX               | 3,969,667    | 7/13/76  | McWilliams          | 324   | 29.5      |                            |
| AY               | 3,979,664    | 9/7/76   | Harris              | 324   | 17        |                            |
| AZ               | 3,984,762    | 10/5/76  | Dowgiallo, Jr.      | 324   | 29.5      |                            |
| BA               | 3,984,768    | 10/5/76  | Staples             | 324   | 62        |                            |
| BB               | 4,008,619    | 2/22/77  | Alcaide et al.      | 73    | 398       |                            |
| BC               | 4,053,824    | 10/11/77 | Dupuis et al.       | 324   | 29.5      |                            |
| BD               | 4,070,624    | 1/24/78  | Taylor              | 327   | 158       |                            |
| BE               | 4,086,531    | 4/25/78  | Bernier             | 324   | 158       |                            |

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|----|--------------|----------|---------|-------|-----------|--------------------|
| BF | 60225078 ✓   | 11/9/85  | Japan   |       |           | Abstract Only      |
| BG | 04372536 ✓   | 12/25/92 | Japan   |       |           | Abstract Only      |
| BH | 04131779 ✓   | 5/6/92   | Japan   |       |           | Abstract Only      |

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|      |   |
|------|---|
| BI ✓ | "The Impedance of Electrical Storage Cells", by N.A. Hampson et al., <u>Journal of Applied Electrochemistry</u> , 1980, pgs. 3-11.  |
| BJ ✓ | "A Package for Impedance/Admittance Data Analysis", by B. Boukamp, <u>Solid State Ionics</u> , 1986, pgs. 136-140.  |
| BK ✓ | "Precision of Impedance Spectroscopy Estimates of Bulk, Reaction Rate, and Diffusion Parameters", by J. Macdonald et al., <u>J. Electroanal. Chem.</u> , 1991, pgs. 1-11. |

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|------------------|--------------|----------|-----------------|-------|-----------|----------------------------|
| BL               | 4,112,351    | 9/5/78   | Back et al.     | 324   | 16        |                            |
| BM               | 4,114,083    | 9/12/78  | Benham et al.   | 320   | 39        |                            |
| BN               | 4,126,874    | 11/21/78 | Suzuki et al.   | 354   | 60        |                            |
| BO               | 4,178,546    | 12/11/79 | Hulls et al.    | 324   | 158       |                            |
| BP               | 4,193,025    | 3/11/80  | Frailing et al. | 324   | 427       |                            |
| BQ               | 4,207,611    | 6/10/80  | Gordon          | 364   | 580       |                            |
| BR               | 4,315,204    | 2/9/82   | Sievers et al.  | 322   | 28        |                            |
| BS               | 4,316,185    | 2/16/82  | Watrous et al.  | 340   | 636       |                            |
| BT               | 4,322,685    | 3/30/82  | Frailing et al. | 324   | 429       |                            |
| BU               | 4,363,407    | 12/14/82 | Barkler et al.  | 209   | 3.3       |                            |
| BV               | 4,369,407    | 1/18/83  | Korbell         | 324   | 416       |                            |
| BW               | 4,412,169    | 10/25/83 | Dell'Orto       | 320   | 64        |                            |

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|    | Document No. | Date     | Country | Class | Sub Class | Translation Yes No |
|----|--------------|----------|---------|-------|-----------|--------------------|
| BX | 03282276 ✓   | 12/12/91 | Japan   |       |           | Abstract Only      |
| BY | 03274479 ✓   | 12/5/91  | Japan   |       |           | Abstract Only      |
| BZ | 5216550 ✓    | 8/27/93  | Japan   |       |           | Abstract Only      |
| CA | 59017894 ✓   | 1/30/84  | Japan   |       |           | Abstract Only      |

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|    |  |
|----|--|
| CB | "Internal Resistance: Harbinger of Capacity Loss in Starved Electrolyte Sealed Lead Acid Batteries, by Vaccaro, F.J. et al., <u>AT&amp;T Bell Laboratories</u> , 1987 IEEE, Ch. 2477, pp. 128,131. |
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|------------------|--------------|----------|-----------------|-------|-----------|----------------------------|
| CC               | 4,390,828    | 6/28/83  | Converse et al. | 320   | 32        |                            |
| CD               | 4,392,101    | 7/5/83   | Saar et al.     | 320   | 20        |                            |
| CE               | 4,396,880    | 8/2/83   | Windebank       | 320   | 21        |                            |
| CF               | 4,408,157    | 10/4/83  | Beaubien        | 324   | 62        |                            |
| CG               | 4,423,378    | 12/27/83 | Marino et al.   | 324   | 427       |                            |
| CH               | 4,423,379    | 12/27/83 | Jacobs et al.   | 324   | 429       |                            |
| CI               | 4,424,491    | 1/3/84   | Bobbett et al.  | 324   | 433       |                            |
| CJ               | 4,459,548    | 7/10/84  | Lentz et al.    | 324   | 158       |                            |
| CK               | 4,514,694    | 4/30/85  | Finger          | 324   | 429       |                            |
| CL               | 4,520,353    | 5/28/85  | McAuliffe       | 340   | 636       |                            |
| CM               | 4,667,279    | 5/19/87  | Maier           | 363   | 46        |                            |
| CN               | 4,678,998    | 7/7/87   | Muramatsu       | 324   | 427       |                            |
| CO               | 4,679,000    | 7/7/87   | Clark           | 324   | 428       |                            |
| CP               | 4,697,134    | 9/29/87  | Burkum et al.   | 320   | 48        |                            |

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|    | Document No.      | Date   | Country       | Class | Sub Class | Translation Yes No |
|----|-------------------|--------|---------------|-------|-----------|--------------------|
| CQ | EP 0 772 056 A1 ✓ | 5/7/97 | EPO           |       |           | X                  |
| CR | EP 0 637 754 A1 ✓ | 2/8/95 | EPO           |       |           | X                  |
| CS | 2 088 159 A ✓     | 6/3/82 | Great Britain |       |           | X                  |

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|      |   |
|------|---|
| CT ✓ | IEEE Recommended Practice For Maintenance, Testings, and Replacement of Large Lead Storage Batteries for Generating Stations and Substations, The Institute of Electrical and Electronics Engineers, Inc., ANSI/IEEE Std. 450-1987, 3/9/1987, pp. 7-15. |
| CU ✓ | "Field and Laboratory Studies to Assess the State of Health of Valve-Regulated Lead Acid Batteries: Part I Conductance/Capacity Correlation Studies", by D. Feder et al., IEEE, August 1992, pgs. 218-233.  |

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Applicant:

Jim K. Klang

Filing Date

Group Art:

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|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| CV               | 4,707,795    | 11/17/87 | Alber et al.     | 364   | 550       |                            |
| CW               | 4,709,202    | 11/24/87 | Koenck et al.    | 320   | 43        |                            |
| CX               | 4,710,861    | 12/1/87  | Kanner           | 363   | 46        |                            |
| CY               | 4,719,428    | 1/12/88  | Liebermann       | 324   | 436       |                            |
| CZ               | 4,743,855    | 5/10/88  | Randin et al.    | 324   | 430       |                            |
| DA               | 4,816,768    | 3/28/89  | Champlin         | 324   | 428       |                            |
| DB               | 4,820,966    | 4/11/89  | Fridman          | 320   | 32        |                            |
| DC               | 4,825,170    | 4/25/89  | Champlin         | 324   | 436       |                            |
| DD               | 4,849,700    | 7/18/89  | Morioka et al.   | 324   | 427       |                            |
| DE               | 4,881,038    | 11/14/89 | Champlin         | 324   | 426       |                            |
| DF               | 4,912,416    | 3/27/90  | Champlin         | 324   | 430       |                            |
| DG               | 4,929,931    | 5/29/90  | McCuen           | 340   | 636       |                            |
| DH               | 4,931,738    | 6/5/90   | MacIntyre et al. | 324   | 435       |                            |
| DI               | 4,947,124    | 8/7/90   | Hauser           | 324   | 430       |                            |
| DJ               | 4,956,597    | 9/11/90  | Heavey et al.    | 320   | 14        |                            |
| DK               | 4,968,941    | 11/6/90  | Rogers           | 324   | 428       |                            |

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|----|---------------|----------|---------|-------|-----------|--------------------|
| DL | WO 93/22666 ✓ | 11/11/93 | WIPO    |       |           | X                  |
| DM | WO 98/58270 ✓ | 12/23/98 | WIPO    |       |           | X                  |

## OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|      |   |
|------|---|
| DN ✓ | "Battery Impedance", by E. Willihnganz et al., <u>Electrical Engineering</u> , September 1959, pgs. 922-925.  |
| DO ✓ | "JIS Japanese Industrial Standard-Lead Acid Batteries for Automobiles", <u>Japanese Standards Association UDC</u> , 621.355.2:629.113.006, Nov. 1995. |

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| Examiner Initial | Document No. | Date     | Name              | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|-------------------|-------|-----------|----------------------------|
| DP               | 5,004,979    | 4/2/91   | Marino et al.     | 324   | 160       |                            |
| DQ               | 5,032,825    | 7/16/91  | Xuznicki          | 340   | 636       |                            |
| DR               | 5,047,722    | 9/10/91  | Wurst et al.      | 324   | 430       |                            |
| DS               | 5,087,881    | 2/11/92  | Peacock           | 324   | 378       |                            |
| DT               | 5,126,675    | 6/30/92  | Yang              | 324   | 435       |                            |
| DU               | 5,140,269    | 8/18/92  | Champlin          | 324   | 433       |                            |
| DV               | 5,144,248    | 9/1/92   | Alexandres et al. | 324   | 428       |                            |
| DW               | 5,170,124    | 12/8/92  | Blair et al.      | 324   | 434       |                            |
| DX               | 5,204,611    | 4/20/93  | Nor et al.        | 320   | 21        |                            |
| DY               | 5,214,370    | 5/25/93  | Harm et al.       | 320   | 35        |                            |
| DZ               | 5,214,385    | 5/25/93  | Gabriel et al.    | 324   | 434       |                            |
| EA               | 5,241,275    | 8/31/93  | Fang              | 324   | 430       |                            |
| EB               | 5,254,952    | 10/19/93 | Salley et al.     | 324   | 429       |                            |
| EC               | 5,281,919    | 1/25/94  | Palanisamy        | 324   | 427       |                            |
| ED               | 5,281,920    | 1/25/94  | Wurst             | 324   | 430       |                            |
| EE               | 5,295,078    | 3/15/94  | Stich et al.      | 364   | 483       |                            |
| EF               | 5,298,797    | 3/29/94  | Redl              | 307   | 246       |                            |
| EG               | 5,300,874    | 4/5/94   | Shimamoto et al.  | 320   | 15        |                            |
| EH               | 5,302,902    | 4/12/94  | Groehl            | 324   | 434       |                            |

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| EI |              |      |         |       |           |                    |

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|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| EK               | 5,331,268    | 7/19/94  | Patino et al.    | 320   | 20        |                            |
| EL               | 5,336,993    | 8/9/94   | Thomas et al.    | 324   | 158.1     |                            |
| EM               | 5,352,968    | 10/4/94  | Reni et al.      | 320   | 35        |                            |
| EN               | 5,343,380    | 8/30/94  | Champlin         | 363   | 46        |                            |
| EO               | 5,365,160    | 11/15/94 | Leppo et al.     | 320   | 22        |                            |
| EP               | 5,365,453    | 11/15/94 | Startup et al.   | 364   | 481       |                            |
| EQ               | 5,381,096    | 1/10/95  | Hirzel           | 324   | 427       |                            |
| ER               | 5,426,371    | 6/20/95  | Salley et al.    | 324   | 429       |                            |
| ES               | 5,432,426    | 7/11/95  | Yoshida          | 320   | 20        |                            |
| ET               | 5,434,495    | 7/18/95  | Toko             | 320   | 44        |                            |
| EU               | 5,442,274    | 8/15/95  | Tamai            | 320   | 23        |                            |
| EV               | 5,457,377    | 10/10/95 | Jonsson          | 320   | 5         |                            |
| EW               | 5,449,996    | 9/12/95  | Matsumoto et al. | 320   | 20        |                            |
| EX               | 5,449,997    | 9/12/95  | Gilmore et al.   | 320   | 39        |                            |
| EY               | 5,485,090    | 1/16/96  | Stephens         | 324   | 433       |                            |
| EZ               | 5,519,383    | 5/21/96  | De La Rosa       | 340   | 636       |                            |
| FA               | 5,528,148    | 6/18/96  | Rogers           | 324   | 426       |                            |
| FB               | 5,550,485    | 8/27/96  | Falk             | 324   | 772       |                            |
| FC               | 5,561,380    | 10/1/96  | Sway-Tin et al.  | 324   | 509       |                            |

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| FD |              |      |         |       |           |                    |

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| FF               | 5,562,501    | 10/8/96  | Kinoshita et al. | 439   | 852       |                            |
| FG               | 5,572,136    | 11/5/96  | Champlin         | 324   | 426       |                            |
| FH               | 5,574,355    | 11/12/96 | McShane et al.   | 320   | 39        |                            |
| FI               | 5,585,728    | 12/17/96 | Champlin         | 324   | 427       |                            |
| FJ               | 5,592,093    | 1/7/97   | Klingbiel        | 324   | 426       |                            |
| FK               | 5,596,260    | 1/21/97  | Moravec et al.   | 320   | 30        |                            |
| FL               | 5,598,098    | 1/28/97  | Champlin         | 324   | 430       |                            |
| FM               | 5,602,462    | 2/11/97  | Stich et al.     | 323   | 258       |                            |
| FN               | 5,606,242    | 2/25/97  | Hull et al.      | 320   | 48        |                            |
| FO               | 5,621,298    | 4/15/97  | Harvey           | 320   | 5         |                            |
| FP               | 5,642,031    | 6/24/97  | Brotto           | 320   | 21        |                            |
| FQ               | 5,650,937    | 7/22/97  | Bounaga          | 364   | 483       |                            |
| FR               | 5,652,501    | 7/29/97  | McClure et al.   | 320   | 17        |                            |
| FS               | 5,675,234    | 10/7/97  | Greene           | 320   | 15        |                            |
| FT               | 5,677,077    | 10/14/97 | Faulk            | 429   | 90        |                            |
| FU               | 5,699,050    | 12/16/97 | Kanazawa         | 340   | 636       |                            |
| FV               | 5,701,089    | 12/23/97 | Perkins          | 327   | 772       |                            |
| FW               | 5,717,336    | 2/10/98  | Basell et al.    | 324   | 430       |                            |
| FX               | 5,757,192    | 5/26/98  | McShane et al.   | 324   | 427       |                            |

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|    | Document No. | Date | Country | Class | Sub Class | Translation Yes No |
|----|--------------|------|---------|-------|-----------|--------------------|
| FY |              |      |         |       |           |                    |

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|   |                                   |                           |
|---|-----------------------------------|---------------------------|
| FORM PTO-1449   | Atty. Docket No.:<br>C382.12-0143 | Serial No.:<br>10/748,792 |
| LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT | Applicant:                        |                           |
|   | Jim K. Klang                      |                           |
|   | Filing Date                       | Group Art:                |
|   | December 30, 2003                 |                           |

## U.S. PATENT DOCUMENTS

| Examiner Initial | Document No. | Date     | Name             | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| GA               | 5,773,978    | 6/30/98  | Becker           | 324   | 430       |                            |
| GB               | 5,789,899    | 8/4/98   | van Phuoc et al. | 320   | 30        |                            |
| GC               | 5,793,359    | 8/11/98  | Ushikubo         | 345   | 169       |                            |
| GD               | 5,821,756    | 10/13/98 | McShane et al.   | 324   | 430       |                            |
| GE               | 5,831,435    | 11/3/98  | Troy             | 324   | 426       |                            |
| GF               | 5,872,443    | 2/16/99  | Williamson       | 320   | 21        |                            |
| GG               | 5,914,605    | 6/22/99  | Bertness         | 324   | 430       |                            |
| GH               | 5,945,829    | 8/31/99  | Bertness         | 324   | 430       |                            |
| GI               | 3,356,936    | 12/5/67  | Smith            | 324   | 29.5      |                            |
| GJ               | 5,488,300    | 1/30/96  | Jamieson         | 324   | 432       |                            |
| GK               | 6,002,238    | 12/14/99 | Champlin         | 320   | 134       |                            |
| GL               | 6,037,777    | 3/14/00  | Champlin         | 324   | 430       |                            |
| GM               | 6,051,976    | 4/18/00  | Bertness         | 324   | 426       |                            |
| GN               | 6,081,098    | 6/27/00  | Bertness et al.  | 320   | 134       |                            |
| GO               | 6,091,245    | 7/18/00  | Bertness         | 324   | 426       |                            |
| GP               | 6,104,167    | 8/15/00  | Bertness et al.  | 320   | 132       |                            |
| GQ               | 6,137,269    | 10/24/00 | Champlin         | 320   | 150       |                            |

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|    | Document No.      | Date    | Country | Class | Sub Class | Translation Yes No |
|----|-------------------|---------|---------|-------|-----------|--------------------|
| GR | DE 29 26 716 B1 ✓ | 1/15/81 | Germany |       |           | X                  |
| GS | 0 022 450 A1 ✓    | 1/21/81 | EPO     |       |           | X                  |

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|------|---|
| GT ✓ | "Performance of Dry Cells", by C. Hambuechen, Preprint of <u>Am. Electrochem. Soc.</u> , April 18-20, 1912, paper No. 19, pgs. 1-5.                   |
| GU ✓ | "A Bridge for Measuring Storage Battery Resistance", by E. Willihnanz, <u>The Electrochemical Society</u> , preprint 79-20, April 1941, pgs. 253-258. |

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## U.S. PATENT DOCUMENTS

| Examiner Initial | Document No. | Date     | Name                  | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|-----------------------|-------|-----------|----------------------------|
| GV               | 3,562,634    | 2/9/71   | Latner                | 31    | 04        |                            |
| GW               | 4,379,990    | 4/12/83  | Sievers et al.        | 322   | 99        |                            |
| GX               | 5,144,218    | 9/1/92   | Bosscha               | 320   | 44        |                            |
| GY               | 5,315,287    | 5/24/94  | Sol                   | 340   | 455       |                            |
| GZ               | 5,469,043    | 11/21/95 | Cherng et al.         | 320   | 31        |                            |
| HA               | 5,546,317    | 8/13/96  | Andrieu               | 364   | 481       |                            |
| HB               | 5,583,416    | 12/10/96 | Klang                 | 320   | 22        |                            |
| HC               | 5,589,757    | 12/31/96 | Klang                 | 320   | 22        |                            |
| HD               | 5,656,920    | 8/12/97  | Cherng et al.         | 320   | 31        |                            |
| HE               | 5,710,503    | 1/20/98  | Sideris et al.        | 320   | 6         |                            |
| HF               | 5,760,587    | 6/2/98   | Harvey                | 324   | 434       |                            |
| HG               | 5,808,469    | 9/15/98  | Kopera                | 324   | 43.4      |                            |
| HH               | 6,008,652    | 12/28/99 | Theofanopoulos et al. | 324   | 434       |                            |
| HI               | 6,009,369    | 12/28/99 | Boisvert et al.       | 701   | 99        |                            |
| HJ               | 6,031,354    | 2/29/00  | Wiley et al.          | 320   | 116       |                            |
| HK               | 6,037,751    | 3/14/00  | Klang                 | 320   | 160       |                            |
| HL               | 6,072,299    | 6/6/00   | Kurie et al.          | 320   | 112       |                            |
| HM               | 6,094,033    | 7/25/00  | Ding et al.           | 320   | 132       |                            |
| HN               | 6,163,156    | 12/19/00 | Bertness              | 324   | 426       |                            |
| HO               | 6,172,483    | 1/9/01   | Champlin              | 320   | 134       |                            |
| HP               | 6,172,505    | 1/9/01   | Bertness              | 324   | 430       |                            |

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|    | Document No. | Date    | Country | Class | Sub Class | Translation Yes No |
|----|--------------|---------|---------|-------|-----------|--------------------|
| HQ | 2 749 397    | 12/5/97 | France  |       |           | X                  |
| HR | 59215674     | 12/5/84 | Japan   |       |           | Abstract Only      |

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|------------------|--------------|----------|--------------------|-------|-----------|----------------------------|
| HT               | 3,989,544    | 11/2/76  | Santo              | 429   | 65        |                            |
| HU               | 4,745,349    | 5/17/88  | Palanisamy et al.  | 320   | 22        |                            |
| HV               | 4,876,495    | 10/24/89 | Palanisamy et al.  | 320   | 18        |                            |
| HW               | 4,937,528    | 6/26/90  | Palanisamy         | 324   | 430       |                            |
| HX               | 4,968,942    | 11/6/90  | Palanisamy         | 324   | 430       |                            |
| HY               | 5,179,335    | 1/12/93  | Nor                | 320   | 21        |                            |
| HZ               | 5,266,880    | 11/30/93 | Newland            | 320   | 14        |                            |
| IA               | 5,451,881    | 9/19/95  | Finger             | 324   | 433       |                            |
| IB               | 5,705,929    | 1/6/98   | Caravello et al.   | 324   | 430       |                            |
| IC               | 5,717,937    | 2/10/98  | Fritz              | 395   | 750.01    |                            |
| ID               | 5,862,515    | 1/19/99  | Kobayashi et al.   | 702   | 63        |                            |
| IE               | 5,895,440    | 4/20/99  | Proctor et al.     | 702   | 63        |                            |
| IF               | 5,929,609    | 7/27/99  | Joy et al.         | 322   | 25        |                            |
| IG               | 6,072,300    | 6/6/00   | Tsuji              | 320   | 116       |                            |
| IH               | 4,659,977    | 4/21/87  | Kissel et al.      | 320   | 64        |                            |
| II               | 4,913,116    | 4/3/90   | Katogi et al.      | 123   | 425       |                            |
| IJ               | 5,160,881    | 11/3/92  | Schramm et al.     | 322   | 7         |                            |
| IK               | 5,338,515    | 8/16/94  | Dalla Betta et al. | 422   | 95        |                            |
| IL               | 5,537,967    | 7/23/96  | Tashiro et al.     | 123   | 792.1     |                            |
| IM               | 5,548,273    | 8/20/96  | Nicol et al.       | 340   | 439       |                            |
| IN               | 5,747,909    | 5/5/98   | Syverson et al.    | 310   | 156       |                            |

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|    | Document No. | Date    | Country | Class | Sub Class | Translation Yes No |
|----|--------------|---------|---------|-------|-----------|--------------------|
| IO | 62-180284 ✓  | 8/7/87  | Japan   |       |           | Abstract           |
| IP | 7-128414 ✓   | 5/19/95 | Japan   |       |           | Abstract           |

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|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| IR               | 6,114,834    | 9/5/00   | Parise           | 320   | 109       |                            |
| IS               | 6,150,793    | 11/21/00 | Lesesky et al.   | 320   | 104       |                            |
| IT               | 3,876,931    | 4/8/75   | Godshalk         | 324   | 29.5      |                            |
| IU               | 5,347,163    | 9/13/94  | Yoshimura        | 307   | 66        |                            |
| IV               | 5,939,861    | 8/17/99  | Joko et al.      |       |           |                            |
| IW               | 5,339,018    | 8/16/94  | Brokaw           | 320   | 35        |                            |
| IX               | 5,412,323    | 5/2/95   | Kato et al.      | 324   | 429       |                            |
| IY               | 5,426,416    | 6/20/95  | Jefferies et al. | 340   | 664       |                            |
| IZ               | 5,825,174    | 10/20/98 | Parker           | 324   | 106       |                            |
| JA               | 5,939,855    | 8/17/99  | Proctor et al.   | 320   | 104       |                            |
| JB               | 5,254,952    | 10/19/93 | Salley et al.    | 324   | 429       |                            |
| JC               | 4,217,645    | 8/12/80  | Barry et al.     | 364   | 483       |                            |
| JD               | 4,633,418    | 12/30/86 | Bishop           | 364   | 554       |                            |
| JE               | 5,321,626    | 6/14/94  | Palladino        | 364   | 483       |                            |
| JF               | 5,969,625    | 10/19/99 | Russo            | 340   | 636       |                            |
| JG               | 6,222,369    | 4/24/01  | Champlin         | 324   | 430       |                            |
| JH               | 6,225,808    | 5/1/01   | Varghese et al.  | 324   | 426       |                            |
| JI               | 6,249,124    | 6/19/01  | Bertness         | 324   | 426       |                            |
| JJ               | 6,259,254    | 7/10/01  | Klang            | 324   | 427       |                            |
| JK               | 6,262,563    | 7/17/01  | Champlin         | 320   | 134       |                            |
| JL               | 6,294,896    | 9/25/01  | Champlin         | 320   | 134       |                            |
| JM               | 6,294,897    | 9/25/01  | Champlin         | 320   | 153       |                            |

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|----|--------------|---------|---------|-------|-----------|--------------------|
| JN | 4-8636 ✓     | 1/13/92 | Japan   |       |           | X (Abstract)       |
| JO | 63027776 ✓   | 2/5/88  | Japan   |       |           | Abstract Only      |

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|------------------|--------------|----------|-----------------|-------|-----------|----------------------------|
| JP               | 4,379,989    | 4/12/83  | Kurz et al.     | 320   | 26        |                            |
| JQ               | 4,680,528    | 7/14/87  | Mikami et al.   | 320   | 32        |                            |
| JR               | 5,633,985    | 5/27/97  | Severson et al. | 395   | 2.76      |                            |
| JS               | 5,739,667    | 4/14/98  | Matsuda et al.  | 320   | 5         |                            |
| JT               | 4,024,953    | 5/1977   | Nailor, III     | 206   | 344       |                            |
| JU               | 6,250,973    | 6/2001   | Lowery et al.   | 439   | 763       |                            |
| JV               | 6,254,438    | 7/2001   | Gaunt           | 439   | 755       |                            |
| JW               | 6,304,087    | 10/16/01 | Bertness        | 324   | 426       |                            |
| JX               | 6,310,481    | 10/30/01 | Bertess         | 324   | 430       |                            |
| JY               | 6,313,607    | 11/6/01  | Champlin        | 320   | 132       |                            |
| JZ               | 6,313,608    | 11/6/01  | Varghese et al. | 32    | 132       |                            |
| KA               | 6,316,914    | 11/13/01 | Bertness        | 320   | 134       |                            |
| KB               | 5,435,185    | 7/25/95  | Eagan           | 73    | 587       |                            |
| KC               | 5,445,026    | 8/29/95  | Eagan           | 73    | 591       |                            |
| KD               | 4,667,143    | 5/19/87  | Cooper et al.   | 320   | 22        |                            |
| KE               | 4,847,547    | 7/11/89  | Eng, Jr. et al. | 320   | 35        |                            |
| KF               | 5,574,355    | 11/12/96 | McShane et al.  | 320   | 39        |                            |
| KG               | 4,663,580    | 5/5/87   | Wortman         | 320   | 35        |                            |

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|    | Document No.  | Date    | Country | Class | Sub Class | Translation Yes No |
|----|---------------|---------|---------|-------|-----------|--------------------|
| KH | WO 99/23738 ✓ | 5/14/99 | WIPO    |       |           | X                  |
| KI | WO 94/05069 ✓ | 3/3/94  | PCT     |       |           | X                  |

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|------|--|
| KJ ✓ | National Semiconductor Corporation, "High Q Notch Filter", 3/69, Linear Brief 5, March 1969.                                 |
| KK ✓ | Burr-Brown Corporation, "Design A 60 Hz Notch Filter with the UAF42", 1/94, AB-071, 1994.                                    |
| KL ✓ | National Semiconductor Corporation, "LMF90-4 <sup>th</sup> -Order Elliptic Notch Filter", 12/94, RRD-B30M115, December 1994. |

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|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| KM               | 6,323,650    | 11/27/01 | Bertness et al.  | 324   | 426       |                            |
| KN               | 6,329,793    | 12/11/01 | Bertness et al.  | 320   | 132       |                            |
| KO               | 6,331,762    | 12/18/01 | Bertness         | 320   | 134       |                            |
| KP               | 6,332,113    | 12/18/01 | Bertness         | 702   | 63        |                            |
| KQ               | 4,297,639    | 10/27/81 | Branham          | 324   | 429       |                            |
| KR               | 5,653,659    | 8/5/97   | Kunibe et al.    | 477   | 111       |                            |
| KS               | 6,161,640    | 12/19/00 | Yamaguchi        | 180   | 65.8      |                            |
| KT               | 4,351,405    | 6/28/82  | Fields et al.    | 180   | 65        |                            |
| KU               | 6,359,441    | 3/16/02  | Bertness         | 324   | 426       |                            |
| KV               | 4,047,091    | 9/1997   | Hutchines et al. | 363   | 59        |                            |
| KW               | 5,653,659    | 8/1997   | Kunibe et al.    | 477   | 111       |                            |
| KX               | 5,637,978    | 6/1997   | Kellett et al.   | 320   | 2         |                            |
| KY               | 5,095,223    | 3/1992   | Thomas           | 307   | 110       |                            |
| KZ               | 5,194,799    | 3/1993   | Tomantschger     | 320   | 2         |                            |
| LA               | 5,754,417    | 5/1998   | Nicollini        | 363   | 60        |                            |
| LB               |              |          |                  |       |           |                            |

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|----|--------------|------|---------|-------|-----------|--------------------|
| LC |              |      |         |       |           |                    |
| LD |              |      |         |       |           |                    |

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|    |   |
|----|---|
| LE | "Alligator Clips with Wire Penetrators" J.S. Popper, Inc. product information, downloaded from <a href="http://www.jspopper.com/">http://www.jspopper.com/</a> , undated            |
| LF | "#12: LM78S40 Simple Switcher DC to DC Converter", ITM e-Catalog, downloaded from <a href="http://www.pcbcafe.com/">http://www.pcbcafe.com/</a> , undated                           |
| LG | "Simple DC-DC Converts Allows Use of Single Battery", Electronix Express, downloaded from <a href="http://www.elexp.com/t_dc-dc.htm">http://www.elexp.com/t_dc-dc.htm</a> , undated |

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|   |  | Jim K. Klang                      |                           |
|   |  | Filing Date                       | Group Art:                |
|   |  | December 30, 2003                 |                           |

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|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| LH               | 5,818,234    | 10/1998  | McKinnon         | 324   | 433       |                            |
| LI               | 6,140,797    | 10/2000  | Dunn             | 320   | 105       |                            |
| LJ               | 6,181,545    | 1/2001   | Amatucci et al.  | 361   | 502       |                            |
| LK               | 6,346,795    | 2/2002   | Haraguchi et al. | 320   | 136       |                            |
| LM               | 6,347,958    | 2/2002   | Tsai             | 439   | 488       |                            |
| LN               | 6,351,102    | 2/26/02  | Troy             | 320   | 139       |                            |
| LO               | 6,359,441    | 3/19/02  | Bertness         | 324   | 426       |                            |
| LP               | 6,363,303    | 3/26/02  | Bertness         | 701   | 29        |                            |
| LQ               | 5,037,778    | 8/6/91   | Stark et al.     | 437   | 216       |                            |
| LR               | 6,144,185    | 11/7/00  | Dougherty et al. | 320   | 132       |                            |
| LS               | 5,711,648    | 1/27/98  | Hammerslag       | 414   | 786       |                            |
| LT               | 5,927,938    | 7/27/99  | Hammerslag       | 414   | 809       |                            |
| LU               | 5,951,229    | 9/14/99  | Hammerslag       | 414   | 398       |                            |
| LV               | 5,961,561    | 10/5/99  | Wakefield, II    | 701   | 29        |                            |
| LW               | 5,961,604    | 10/5/99  | Anderson et al.  | 709   | 229       |                            |
| LX               | 6,236,332    | 5/22/01  | Conkright et al. | 340   | 825.06    |                            |
| LY               | 6,351,102    | 2/26/02  | Troy             | 320   | 139       |                            |
| LZ               | 5,821,757    | 10/13/98 | Alvarez et al.   | 324   | 434       |                            |
| MA               | 6,167,349    | 12/26/00 | Alvarez          | 702   | 63        |                            |

## FOREIGN PATENT DOCUMENTS

|    | Document No. | Date | Country | Class | Sub Class | Translation Yes No |
|----|--------------|------|---------|-------|-----------|--------------------|
| MB |              |      |         |       |           |                    |

OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)

|    |   |
|----|---|
| MC | "DC-DC Converter Basics", Power Designers, downloaded from<br><a href="http://www.powederdesigners.com/InforWeb.design_center/articles/DC-DC/converter.shtm">http://www.powederdesigners.com/InforWeb.design_center/articles/DC-DC/converter.shtm</a> , undated |
| MD |   |

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|---|-----------------------------------|---------------------------|
| FORM PTO-1449   | Atty. Docket No.:<br>C382.12-0143 | Serial No.:<br>10/748,792 |
| LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT | Applicant:                        |                           |
|   | Jim K. Klang                      |                           |
|   | Filing Date                       | Group Art:                |
|   | December 30, 2003                 |                           |

## U.S. PATENT DOCUMENTS

| Examiner Initial | Document No. | Date     | Name             | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|------------------|-------|-----------|----------------------------|
| ME               | 4,665,370    | 5/1987   | Holland          | 324   | 429       |                            |
| MF               | 4,361,809    | 11/1982  | Bil et al.       | 324   | 426       |                            |
| MG               | 6,392,414    | 5/21/02  | Bertness         | 324   | 429       |                            |
| MH               | 6,417,669    | 7/9/02   | Champlin         | 324   | 426       |                            |
| MI               | 6,424,158    | 7/23/02  | Klang            | 324   | 433       |                            |
| MJ               | 6,441,585    | 8/17/02  | Bertness         | 320   | 132       |                            |
| MK               | 6,445,158    | 9/3/02   | Bertness et al.  | 320   | 104       |                            |
| ML               | 6,384,608    | 5/7/02   | Namaky           | 324   | 425       |                            |
| MM               | 6,388,448    | 5/14/02  | Cervas           | 324   | 426       |                            |
| MN               | 6,307,349    | 10/23/01 | Koenck et al.    | 320   | 112       |                            |
| MO               | 6,411,098    | 6/25/02  | Laletin          | 324   | 436       |                            |
| MP               | 6,456,045    | 9/24/02  | Troy et al.      | 320   | 139       |                            |
| MQ               | 6,466,025    | 10/15/02 | Klang            | 324   | 429       |                            |
| MR               | 6,466,026    | 10/15/02 | Champlin         | 324   | 430       |                            |
| MS               | 4,564,798    | 1/14/86  | Young            | 320   | 6         |                            |
| MT               | 5,563,496    | 10/8/96  | McClure          | 320   | 48        |                            |
| MU               | 5,796,239    | 8/18/98  | van Phuoc et al. | 320   | 107       |                            |

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|    | Document No.  | Date    | Country | Class | Sub Class | Translation Yes No |
|----|---------------|---------|---------|-------|-----------|--------------------|
| MV | RU 2089015-C1 | 8/27/97 | Russia  |       |           | Abstract Only      |
| MW | 09061505      | 3/7/97  | Japan   |       |           | Abstract Only      |
| MX | 10056744      | 2/24/98 | Japan   |       |           | Abstract Only      |

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| MY | "Notification of Transmittal of The International Search Report or the Declaration", PCT/US02/29461. |
| MZ | "Notification of Transmittal of The International Search Report or the Declaration", PCT/US03/07546. |

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|   |                                   |                           |
|---|-----------------------------------|---------------------------|
| <b>FORM PTO-1449</b>  | Atty. Docket No.:<br>C382.12-0143 | Serial No.:<br>10/748,792 |
| LIST OF PATENTS AND PUBLICATIONS FOR<br>APPLICANT'S INFORMATION<br>DISCLOSURE STATEMENT | Applicant:                        |                           |
|   | Jim K. Klang                      |                           |
|   | Filing Date                       | Group Art:                |
|   | December 30, 2003                 |                           |

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| Examiner Initial | Document No. | Date     | Name              | Class | Sub Class | Filing Date If Appropriate |
|------------------|--------------|----------|-------------------|-------|-----------|----------------------------|
| NA               | 4,888,716    | 12/19/89 | Ueno              | 364   | 550       |                            |
| NB               | 6,495,990 B2 | 12/17/02 | Champlin          | 320   | 132       |                            |
| NC               | 4,385,269    | 5/24/83  | Aspinwall et al.  | 320   | 14        |                            |
| ND               | 4,686,442    | 8/11/87  | Radomski          | 320   | 17        |                            |
| NE               | 6,061,638    | 5/9/00   | Joyce             | 702   | 63        |                            |
| NF               | 6,359,442    | 3/19/02  | Henningson et al. | 324   | 426       |                            |
| NG               | 5,541,489    | 7/30/96  | Dunstan           | 320   | 2         |                            |
| NH               | 6,424,157    | 7/23/02  | Gollomp et al.    | 324   | 430       |                            |
| NI               | 6,534,993    | 3/18/03  | Bertness          | 324   | 433       |                            |
| NJ               | 6,544,078    | 4/8/03   | Palmisano et al.  | 439   | 762       |                            |
| NK               | 6,556,019    | 4/29/03  | Bertness          | 324   | 426       |                            |
| NL               | 6,566,883    | 5/20/03  | Vonderhaar et al. | 324   | 426       |                            |
| NM               | 6,586,941    | 7/1/03   | Bertness et al.   | 324   | 426       |                            |
| NN               | 6,597,150    | 7/22/03  | Bertness et al.   | 320   | 104       |                            |
| NO               | 2002/0171428 | 11/21/02 | Bertness          | 324   | 426       |                            |
| NP               | 6,263,268    | 7/17/01  | Nathanson         | 701   | 29        |                            |

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|    | Document No.  | Date     | Country | Class | Sub Class | Translation Yes No |
|----|---------------|----------|---------|-------|-----------|--------------------|
| NQ | WO 00/67359 ✓ | 11/9/00  | WIPO    |       |           | X                  |
| NR | WO 01/51947 ✓ | 7/19/01  | WIPO    |       |           | X                  |
| NS | WO 98/04910 ✓ | 2/5/98   | WIPO    |       |           | X                  |
| NT | WO 00/62049 ✓ | 10/19/00 | WIPO    |       |           | X                  |
| NU |               |          |         |       |           |                    |
| NV |               |          |         |       |           |                    |

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| NW ✓ | "Notification of Transmittal of The International Search Report or the Declaration", PCT/US03/06577. |
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|   | Jim K. Klang                      |                           |
|   | Filing Date                       | Group Art:                |
|   | December 30, 2003                 |                           |

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|                  | OA           | 5,410,754    | 4/1995  | Klotzbach et al. | 370       | 85.13                      |
|                  | OB           | 5,654,623    | 8/1997  | Shiga et al.     | 320       | 48                         |
|                  | OC           | 6,055,468    | 4/2000  | Kaman et al.     | 701       | 29                         |
|                  | OD           | 2003/0025481 | 2/2003  | Bertness         | 320       | 155                        |
|                  | OE           | 5,313,152    | 5/1994  | Wozniak et al.   | 320       | 118                        |
|                  | OF           | 2003/0184306 | 10/2003 | Bertness et al.  | 324       | 426                        |
|                  | OG           | 2004/0000891 | 1/2004  | Raichle et al.   | 320       | 107                        |
|                  | OH           | 3,750,011    | 7/1973  | Kreps            | 324       | 29.5                       |
|                  | OI           | 5,159,272    | 10/1992 | Rao et al.       | 324       | 429                        |
|                  | OJ           | 5,325,041    | 6/1994  | Briggs           | 320       | 44                         |
|                  | OK           | 6,526,361    | 2/2003  | Jones et al.     | 702       | 63                         |
|                  | OL           | 6,667,624    | 12/2003 | Raichle et al.   | 324       | 522                        |
|                  | OM           | 2002/0010558 | 1/24/02 | Bertness et al.  | 702       | 63                         |
|                  | ON           |              |         |                  |           |                            |
|                  | OO           |              |         |                  |           |                            |
|                  | OP           |              |         |                  |           |                            |

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|  | Document No. | Date          | Country | Class | Sub Class | Translation Yes No |
|--|--------------|---------------|---------|-------|-----------|--------------------|
|  | OQ           | JP 11103503 A | 4/1999  | Japan |           | X (Abstract)       |
|  | OR           | WO 01/59443   | 2/9/01  | WIPO  |           | X                  |
|  | OS           |               |         |       |           |                    |
|  | OT           |               |         |       |           |                    |
|  | OU           |               |         |       |           |                    |
|  | OV           |               |         |       |           |                    |

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| OW | "Notification of Transmittal of The International Search Report or the Declaration", PCT/US03/07837. |
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